Health Informatics Based on ML models

Bloti Teh
George Mason University
bteh@gmu.edu

***Abstract*—Quality of life depends on the physical and mental health of the individual, the degree of independence, the social relationship with the environment, and other factors. The assessment of the quality of life is based on the individual value system and the cultural environment that he lives in Eurostat proposes the wellbeing of its citizens for measuring quality of life. The framework of quality of life focuses on eight plus one dimensions that relate to the functional capabilities of citizens. While the last dimension represents the personal achievement of life satisfaction and self-defined wellbeing. In this work we apply machine learning model to evaluate health of the citizen and children.**

***Index Terms*—Health, Medicine, Data, Citizen.**

I. Introduction

Since 1912, the United States has been divided into 435 congressional districts, each with a population of about 710,000 individuals. Each district elects a representative to the U.S. House of Representatives for a two-year term. According to competitive races across Texas in 2020, there are 36 delegations of congressional representatives consisting of 22 Republicans, 13 Democrats and 1 Vacancy [9]. Although Republicans held on to battleground seats in 2020, the Democrats had increased 2 seats from 2018. Inherently, democracy is not flawless. The majority does not always vote the right leaders or left into offices. Despite its flaws, it is incumbent upon all citizens of their individual democratic nations, states, districts, etc. to ensure that democracy works for all. It is evident that silence eventually kills democracy and fuels autocratic inclination, which leads to bad governance and instability. However, the people have the power to guide the direction of a country. It is impossible for all people to rule the country at the same time. Therefore, it is necessary to select their representatives to act on their behalf deeming to benefit the public according to the way they require. Americans believe that their representatives shall improve their quality of life. According to a dataset from Latin America study, people engaged in political activities are more satisfied with their lives because they feel autonomous, competent, and relevant [15] and Winters, 2008). However, some factors of the process are unfair for election representatives [1]. The main problem is that found in the United State is gerrymandering.

The example showed that there are fifty people in a tiny stage. Thirty people belong to the yellow party, while others belong to the green party. If the stage needs to divide into five districts, the perfect ideal shall be blue sixty percent for three seats and red forty percent for two seats. It is easy to draw to meet the ideal concept as proportionate outcomes. The two disproportionate outcomes can be divided by two processes. First process is a packed district. It is drawn to include as many of the opposing party's voters as possible. This process helps the yellow party win surrounding districts where the opposition's strength has been diluted to create the packed district. The other process is called Cracking. It is the opposite packed process. It splits up clusters of opposition voters among several districts, so that they will be outnumbered in each district [11].

A. study area

In the last decade, the population of Texas has increased rapidly, growing around 4.3 million, consisting 55 percent are Latinos and about 90 percent are nonwhite. These fast-growing color communities, the demand for representation will be increased also. However, Texas Republicans believe that adding the representatives are not suitable because it is probably going to be significant fights about whether they are obligated to do that under the Voting Rights Act and other laws. In 2022, majority people believe that the congressional seat in Texas is going to increase from 36 seats to 39 seats depending on who controls the U.S. House of Representatives [14].Emotion and sentiment analysis of Patient data based on social media data is used in machine learning applications [2]–[9] [10] [5] [11], [12] [13], [11] [12] [14].

B. Quality of life

Generally, employers that evaluate the aspects of economical, socio-cultural, political environment, services of health care, education, transport, public sector as well as supply of products and services, aspects of natural conditions are used as indicators for evaluating and comparing people's quality of life in different countries. Online health informatic tools and platforms based on social media create different reports for health [15]–[31].

However, no research set criteria for studying the effect of gerrymandering on quality of life. This is because each of indicators has other external factors that affect both directly and indirectly on each indicator as well. Therefore, this research focuses on only the top three ranks of indicators of quality of life (material welfare (according to GNP), health and political stability and safety) for applying and analysis of the effects of gerrymandering in Texas.

C. Methods

The first methodology of this research was studying on the gerrymandering and quality of life. The state was selected for

Fig. 1. Figure 5

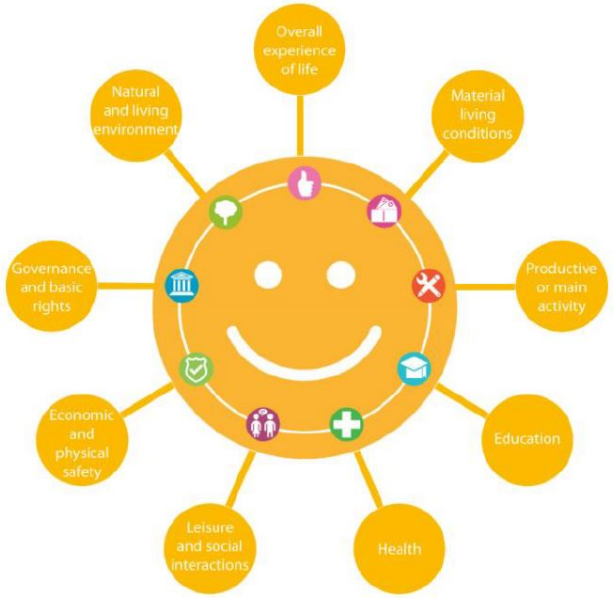

Fig. 2. Figure 6

Congress	District					
	13th	*14th*	*15th*	*16th*	*17th*	*18th*
111th	*R*	*R*	D	D	D	**D**
112th	*R*	*R*	D	D	R	**D**
113th	*R*	*R*	D	D	R	**D**
114th	*R*	*R*	D	D	R	**D**
115th	*R*	*R*	D	D	R	**D**
116th	*D*	*R*	D	D	R	**D**
117th	*D*	*R*	D	D	R	**D**

Remark: R is Republican, and D is Democratic

case study base on concerning congressional district and gerrymandering rank. Third, the key data were identified solving the relationship between gerrymandering and quality of life. The volume, types, sources, and quality were considered in this part. After the data collection was cleaned, statistical analysis could begin. These datasets were retrieved from the Census Bureau's developing data and Kids Count Data Center that are publicly dissemination platform.

It contained many attributes such as population, election vote results, congressional districts area, health insurance, inspection results, poverty, education, employment, and income of Texas. These datasets were obtained as a CSV file, which made it easier to load into various tools. The datasets represented an inspection that occurred between 2010 and 2019. Thus, this research can retrieve an abundance of

Fig. 3. Figure 7

Year	*2015*	*2016*	*2017*	*2018*	*2019*
Average	*7.61*	*7.97*	8.43	8.36	7.58
District 02	***3.00***	***4.00***	4.00	6.00	8.00
District 07	*5.00*	*NA*	NA	8.00	8.00
District 18	*11.00*	*12.00*	11.00	10.00	11.00
District 29	*11.00*	*10.00*	11.00	11.00	9.00
District 33	*10.00*	*10.00*	12.00	12.00	10.00
District 35	*8.00*	*8.00*	9.00	14.00	10.00

information regarding the effect of gerrymandering on quality of life in Texas.

D. results

All 10 redistricting events that took place in Texas in the decades between 1973 and 2013. The recent congressional district boundary was set up in 2013 (congress 113th). The seats of Texas gain 4 seats from 32 (Republican 23 and Demarcation 9) to 36 seats (Republican 24 and Demarcation 12). According to shape of boundary, people have suspected gerrymandering on 2nd, 7th, 18th, 29th, 33rd and 35th congressional district of Texas. Most of those congressional districts were the seats of Demarcation in the recent election (congress 177th) with the voted over 65 percent except congestion district 2nd of Texas where people voted Republican.

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